EXHIBIT 3

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA
CHARLESTON DIVISION

IN RE: ETHICON, INC. PELVIC REPAIR SYSTEM PRODUCTS LIABILITY LIGITATION	**Master File No. 2:12-MD-02327** **MDL No. 2327** **JOSEPH R. GOODWIN** **U.S. DISTRICT JUDGE**
THIS DOCUMENT RELATES TO PLAINTIFF: **Diane Bellew (2:12-cv-22473)**	

RULE 26 EXPERT REPORT OF HOWARD JORDI, PhD

I. Background and Qualifications

I, Dr. Howard Jordi received my undergraduate degree in Chemistry from Northern Illinois University in 1967 and my Ph.D. in biochemistry from the same university in 1974.

From 1973-1977, I served in the United States Army Institute of Dental Research where I characterized various drugs contained in biodegradable copolymers of polylactic and polyglycolic acid. I then worked at Water's Associates from 1977-1980. Water's is a world leader in the sale of a wide range of analytical technologies including liquid chromatography, mass spectrometry, rheometry and microcalorimetry. At Waters, I progressed from a Biological Applications chemist to the laboratory manager for the life science division and finally to the Chemicals Applications Manager for the Chromatography Supplies Division.

I am the founder of Jordi Labs and served as president and CEO from 1980-2008. Jordi Labs was founded to provide high quality analytical services to the polymer and plastics industries. In my role as President and CEO, I developed hundreds of analytical methods and have analyzed all of the major polymer systems (polypropylene, polyethylene, urethanes, styrenics, etc.). In this capacity, I have been analyzing polypropylenes for over 25 years. I have deformulated numerous polypropylene samples including identifying and quantifying their additive packages and have been aiding clients for over 25 years in the identification of the root cause of failure in polypropylene systems. I have served extensively as a consultant on polymer related failures for a wide range of industrial clients and have over 40 years of practical experience in the analytical chemistry of polymers. I have in-depth knowledge of a wide range of analytical techniques including FTIR, NMR, DSC, TGA, HPLC, SEM, GPC, DMS, LCMS, GCMS, nanothermal analysis, H-GCMS and PYMS among others. Jordi Labs currently offers over 20 different analytical techniques. I have developed a range of polymeric chromatography columns for polymer molecular weight determination, some of which are patented.

Superoxide radicals react to produce hydrogen peroxide with the reaction being catalyzed by superoxide dismutase (SOD).

$$2O_2^- + 2H^+ \xrightarrow{SOD} H_2O_2 + O_2$$

While both superoxide and hydrogen peroxide can react with polypropylene, the presence of metal ions such as Fe(II) and Cu(I) leads to the generation of hydroxyl radicals which are even more reactive towards polypropylene.

$$O_2^- + M^{n+} \longrightarrow O_2 + M^{(n-1)+}$$
$$H_2O_2 + M^{(n-1)+} \longrightarrow OH\cdot + OH^- + M^{n+}$$

Net Reaction:

$$O_2^- + H_2O_2 \longrightarrow O_2 + OH\cdot + OH^-$$

The overall net reaction shown above is usually referred to as metal catalyzed Haber-Weiss reaction. Most of the hydroxyl radicals generated *in vivo* are formed from the metal ion dependent breakdown of hydrogen peroxide.

Mechanical degradation: Mechanical degradation or stress-induced cracking of polymers is a degradation pathway which involves irreversible breakdown (cracking, fracture, deformation etc.) of the polymeric material under mechanical stress.[19,20] Environmental stress cracking (ESC) is cracking of a polymer due to the combined action of a stress and a fluid. It is associated with the phenomenon of crazing and solvent plasticization of the polymer.[21] As mentioned earlier, the environment of a polymer can have a significant effect on the polymer. The polymer can absorb the fluid surrounding it and the polymer swells causing compressive stress at the surface. This initiates a phenomenon known as crazing which is the mechanical separation of the entangled chains of the polymer. Solvent induced crazes grow more quickly and to greater dimensions than those in inert environments. The crazes that are under the influence of stress act as initiation sites for cracks. Other factors influencing cracking in crazed polymers include time, temperature, molecular weight of the polymer, its structure and thermal history. The stressed chains become mechanically excited. Deexcitation of these chains occurs via various phenomena such as conformational changes, or bond scission/breakage causing the polymer to crack. The ultimate response is a fractured polymeric material. In the conclusion of a 2010 study where polypropylene explants from the human body were characterized, Clave et al. state that "The diffusion of organic molecules into the polymer (especially esterified fatty acids or cholesterol) may be a cause of the

[19] Cornelia Vasile, Degradation and decomposition, in *Handbook of Polyolefin*, eds. Cornelia Vasile and Raymond B. Seymour (Marcel Dekker Inc, New York, USA) 1993, 479-552.
[20] Tibor Kelen, *Mechanical Deformation,* in *Polymer Degradation*, (Van Nostrand Reinhold Company, New York, USA) 1983, 157-172.
[21] R. Chatten, D. Vesely, "*Environmental stress cracking of polypropylene*" in Polypropylene An A-Z Reference *Polymer Science and Technology Series* 2 Ed. J. Karger-Kocsis (1999) 206-214.(ISBN: 978-94-010-5899-5)